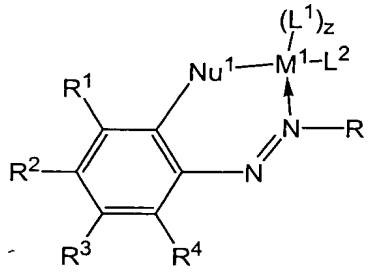
WHAT IS CLAIMED IS:

1. A compound of the general formula (I)



(I)

wherein

Nu^1 denotes -O, -S, -Se, $-PR^a$, NR^a or -COO groups,

R^a denotes hydrogen, alkyl or aryl radicals and

R, R^1, R^2, R^3 and R^4 are identical or different radicals that are selected independently of one another from the group consisting of H, halogens, substituted or unsubstituted C_1-C_8-alkyl, C_2-C_8-alkenyl, C_3-C_{12}-cycloalkyl, C_7-C_{13}-aralkyl and C_6-C_{14}-aryl groups, and R^1 with R^2, R^3 or R^4, and R^2 with R^3 or R^4 may form a ring,

M^1 denotes an element of the 4th to 12th subgroup of the Periodic System,

L^1 is a neutral ligand and

L^2 is an anionic ligand, wherein L^1 and L^2 may be coupled together by one or more covalent bonds, and

z is a whole number from 1 to 3.

2. The compound according to Claim 1, wherein

Nu^1 is O,

R is selected from the group consisting of substituted an unsubstituted C_6-C_{14}-aralkyl groups,

R^1, R^2, R^3 and R^4 are identical or different radicals and are selected independently of one another from the group consisting of H, substituted or unsubstituted C_1-C_8-alkyl groups, C_2-C_8-alkenyl groups, C_3-C_{12}-cycloalkyl groups, C_7-C_{13}-aralkyl groups and C_6-C_{14}-aryl groups,

M^1 is selected from the group consisting of Ti, Zr, Hf, Cr, V, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Ag, Au, Zn, Cd and Hg

L^1 is an organic or inorganic neutral ligand selected from the group consisting of phosphanes of the general formula $(R^{13})_xPH_{3-x}$, amines of the general formula $(R^{13})_xNH_{3-x}$, ethers of the general formula $(R^{13})_2O$, alcohols of the general formula $(R^{13})OH$, pyridine derivatives of the general formula $C_5H_{5-x}(R^{13})_xN$, CO, C_1-C_{12}-alkyl nitrile, C_6-C_{14}-aryl nitrile, and singly or multiply ethylenically unsaturated double bond systems, wherein

R^{13} is selected from the group consisting of H, C_1-C_8-alkyl groups, benzyl radicals and C_6-C_{14}-aryl groups and

x is a whole number from 0 to 3 and

L^2 is an anionic ligand selected from the group consisting of halide ions, amide anions of the formula $R^{14}R^{15}N$, C_1-C_6-alkyl anions, allyl anions, methallyl anions, benzyl anions and aryl anions, wherein

R^{14} and R^{15} independently of one another are selected from the group consisting of H, C_1-C_8-alkyl groups, benzyl radicals and C_6-C_{14}-aryl groups, and R^{14} may also be covalently coupled to R^{15}, and

z may be a whole number from 1 to 3.

3. A compound according to Claim 1, wherein

Nu^1 is O,

R is mesityl, 2,4,6-trimethylphenyl or 2,6-diisopropylphenyl,

R^1, R^2, R^3 and R^4 are identical or different radicals and independently of one another are selected from the group consisting of H, C_1-C_8-alkyl groups and C_6-C_{14}-aryl groups,

M^1 is selected from the group consisting of Ti, Zr, Cr, V, Fe, Co, Ni, Pd, Cu and Zn

L^1 is a neutral ligand selected from the group consisting of triphenylphosphine, triethylphosphine, trimethyl-phosphine, dibenzo-phosphol, triphenyl phosphite, triethyl phosphite, trimethyl phosphite, triphenyl phosphite, trimethyl-amine, triethylamine, dimethylaniline, diethylaniline, benzyl-dimethylamine, benzyl-diethylamine, diisopropyl-amine, diethylamine, dimethylamine, diphenylamine, phenylenediamines, diethyl ether, tetrahydrofuran, water, methanol, ethanol, pyridine, 2-picoline, 3-picoline, 4-picoline, 2,3-lutidine, 2,4-lutidine, 2,5-lutidine, 2,6-lutidine, 3,5-lutidine, CO, acrylonitrile, acetonitrile, propionitrile, butyronitrile, benzonitrile, ethenyl, propenyl, cis-2-butenyl, trans-2-butenyl, cyclohexenyl and norbornenyl,

L^2 is an anionic ligand selected from the group consisting of chloride, bromide, dimethylamide, diethylamide, amide, 2-carboxylic acid methallyl ester, allyl, methyl, ethyl, n-propyl, i-propyl, n-butyl, tert.-butyl, hexyl and phenyl

z may be a whole number from 1 to 3.

4. A compound according to Claim 1, wherein

Nu^1 is O,

R is mesityl or 2,6-diisopropylphenyl,

R^1 is tert.-butyl or phenyl,

R^2 is H,

R^3 is tert.-butyl,

R^4 is H,

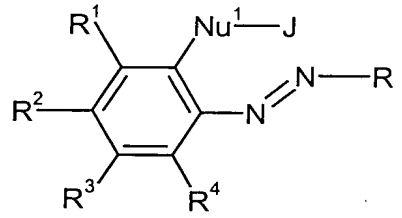
M^1 is Ni or Pd,

L^1 is triphenylphosphane or pyridine,

L^2 is phenyl or methyl and

z is a whole number from 1 to 3.

5. A process for the production of the compounds according to Claim 1 comprising reactinga ligand of the general formula (II)



(II)

where

J is selected from the group consisting of H and an element of the 1st or 2nd main group of the Periodic System and wherein

Nu^1, R, R^1, R^2, R^3, R^4 have the same meanings as in Claim 1,

with 0.2 to 5 equivalents of a metal compound of the general formulae

M^1X_4, M^1X_3, $M^1L^1L^2$, or M^1X_2,

in which

M^1, L^1 and L^2 have the same meanings as in Claim 1 and

X is selected from the group consisting of halogen, C_1-C_8-alkyl, C_3-C_{12}-cycloalkyl, C_7-C_{13}-aralkyl and C_6-C_{14}-aryl groups and in which M^1X_4, M^1X_3 or M^1X_2 may be stabilized by further neutral ligands.

6. A process for the production of the compounds according to Claim 5, further comprising purifying and isolating the compound by crystallization.

7. Process for the production of the compounds according to Claim 5,

wherein the preparation is carried out *in situ*.

8. Process for the production of the compounds according to Claim 7, wherein the ligand and the metal compound are reacted *in situ* in the presence of one or more olefinic monomers.

9. Process for the production of compounds according to Claim 1, wherein the process is carried out in aprotic polar solvents.

10. Process for the production of olefin (co)polymers, comprising reacting compounds according to Claim 1 in the presence of olefinic monomers selected from the group consisting of 1-olefins, cycloolefins, functionalized 1-olefins and mixtures thereof.

11. Process according to Claim 10, further comprising adding boron compounds or aluminum compounds as co-catalysts to the reaction mixture.

12. Process according to Claim 11, wherein the molar ratio of co-catalyst to metal M^1 in the compound according to formula (I) is in the range from 1:10 to 1:10,000.

13. Process according to Claim 11, wherein aluminoxanes are used as co-catalysts.

14. Process according to Claim 10, wherein the reaction is carried out in polar solvents or solvent mixtures.

15. Reaction products prepared by reacting the compounds according to Claim 1 with a co-catalyst(s).

16. Olefin (co)polymer prepared according to the process of Claim 10.

17. Molded parts prepared by processing the reaction products according to Claim 15.